DOCUMENT RESUME

ED 438 670 EC 307 692

AUTHOR	Clark, Catherine
TITLE	The Role of Assistive Listening Devices in the Classroom. NETAC Teacher Tipsheet.
INSTITUTION	Rochester Inst. of Technology, NY. National Technical Inst. for the Deaf.
SPONS AGENCY	Office of Special Education and Rehabilitative Services (ED), Washington, DC.
PUB DATE	1998-00-00
NOTE	4p.; For other NETAC teacher tipsheets, see ED 307 686-691.
CONTRACT	H078A60004
AVAILABLE FROM	Northeast Technical Assistance Center, Rochester Institute of Technology, National Technical Institute for the Deaf, 52 Lomb Memorial Dr., Rochester, NY 14623-5604. Tel: 716-475-6433 (Voice/TTY); Fax: 716-475-7660; e-mail: netac@rit.edu; Web site: http://netac.rit.edu. For full text: http://www.netac.rit.edu/publication/tipsheet.html.
PUB TYPE	Guides - Classroom - Teacher (052)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Assistive Devices (for Disabled); Audiovisual Communications; *Communication Aids (for Disabled); Deafness; Electronic Equipment; *Hearing Impairments; Higher Education; Listening; Partial Hearing; Secondary Education; Sensory Aids
IDENTIFIERS	*Assistive Listening Devices

ABSTRACT

This tipsheet offers guidelines for instructors who have a student with a hearing impairment who is using an assistive listening device (ALD). The ALD is a microphone/transmitter positioned close to the instructor's mouth to send the instructor's voice to the receiver worn by the student. ALDs can eliminate echoes and reduce surrounding noise interference. Information is provided on aspects of ALLs, including: the different types of ALDs; frequency modulated (FM) systems; soundfield amplifications systems; induction loop systems; benefits of using assistive listening devices (such as portability and usefulness in classroom or small group); and strategies for using assistive listening devices, such as positioning the ALD's microphone for the clearest speech reception, providing information to the entire class on the ALD, and allowing the student to couple the ALD system to audiovisual equipment when possible. (DB)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 438 670

NETAC

TEACHER TIPSHEET

THE ROLE OF ASSISTIVE LISTENING DEVICES IN THE CLASSROOM

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

EC 307692

The Role of Assistive Listening Devices in the Classroom

What are Assistive Listening Devices?
Many students who use hearing aids effectively in quiet environments have a difficult time following information presented in large college classrooms. In the classroom, the instructor's voice is competing with background noise, room echo, and distance. Therefore, the intelligibility of the instructor's voice is degraded by the poor room acoustics as well as the hearing loss. Most Assistive Listening Device systems (ALDs) use a microphone /transmitter positioned close to the instructor's mouth to send the instructor's voice through the air or by cable to the receiver worn by the student. By placing the microphone close to the instructor's mouth, ALDs can provide clear sound over distances, eliminate echoes, and reduce surrounding noises. Assistive Listening Devices have proven to be an effective teaching tool for students with hearing loss. Providing a good listening environment can have a major impact on an individual's academic performance.

What are the different types of Assistive Listening Devices?
ALDs utilize different technologies. Typically, they are wireless or wired. Wireless ALDs make use of radio frequencies, light rays, or magnetic inductive energy to transmit sound. Hardwired ones use direct electrical connection to transmit the auditory signal. Each system has special features, capabilities, advantages, and disadvantages. Three ALD systems–FM, Soundfield Amplification, and Induction Loop Systems–will be discussed.

Frequency Modulated (FM) Systems:
An FM system is a wireless, portable battery-operated device that uses radio transmission to send auditory signals, i.e. speech, from a transmitter to a receiver. With most FM systems, the instructor wears a lavelier microphone connected to a body-worn transmitter. The student wears the FM receiver unit clipped to his/her clothing. The FM receiver can also be connected to the student's hearing aid via an induction neckloop system or direct audio input cables. Special FM cables are also available for cochlear implant users. When the instructor speaks, the speech signal is broadcast by radio signals to the FM receiver linked to the student's hearing aid. The ranges of FM systems extend from 30 ft. to more than 200 ft., depending on the power and antenna. FM systems can transmit through walls and buildings. Therefore, multiple frequencies are required for adjacent room usage.

Recently, the FM receiver units have been significantly miniaturized. In FM/BTEs (behind-the-ear hearing aids), the FM receiver is built into the same casing as the hearing aid. Hearing aid manufacturers have also introduced wireless FM boot receivers that attach to the bottom of a hearing aid. An audiologist can assist with the selection and fitting of an appropriate FM system.

Soundfield Amplification Systems:
Soundfield amplification systems amplify and broadcast the instructor's voice through wall or ceiling-mounted loudspeakers. The system consists of a microphone/FM transmitter, amplifier, and one or more loudspeakers. A loudspeaker can also be placed next to the student. The soundfield speakers should be strategically placed in order for the student to achieve the most benefit from the system. The system should be installed under the guidance of an audiologist or someone who understands room acoustics.

Induction Loop Systems:
Induction loop systems use electromagnetic waves for transmission. Sounds are picked up by the instructor's microphone, amplified, and sent through the wire/loop, creating an invisible electromagnetic field. The telecoil (T-switch) in the student's hearing aid serves as a receiver for the signal. The loop can encircle the entire room or be small and hidden under a chair or table. When using large loop systems, care should be taken not to loop adjacent classrooms, as the electromagnetic energy will spill over, causing interference. Reportedly, newer three-dimensional loops have eliminated the problem of spillover.

What are the benefits of using Assistive Listening Devices?
A distinct acoustic advantage of ALDs compared to personal hearing aids is the position of the input microphone at a location close to the instructor's mouth. The microphone location allows the level of the instructor's voice to stay constant to the student regardless of the distance between the instructor and the student. The instructor's voice is also heard clearly over room noises such as chairs moving, fan motors running, and students talking.

- ALDs can be moved from class to class or permanently installed.
- ALDs are helpful when listening in a whole classroom or in small groups.
- ALDs can be used alone or in conjunction with personal hearing aids.
- ALDs are used with students who have varying degrees of hearing levels ranging from normal hearing acuity (e.g., students with learning disabilities, attention deficit disorders, central auditory process disorders) to students who have a profound hearing loss.
- ALDs can be beneficial when listening to audio and audiovisual equipment, e.g., VCRs, tape recorders, and stereos.

Strategies for Using Assistive Listening Devices

Assistive listening devices will provide maximum benefit when used appropriately. Here are helpful tips for using assistive listening devices.

1. Become knowledgeable about the ALD system. Request in-service training from an audiologist and/or manufacturer of the system. Involve the ALD user in the training.

2. Discuss with the student the situations where the ALD will be used.

3. Position the ALD's microphone in locations that will provide the clearest speech reception. The microphone should not be near a noise source, e.g. overhead projector. The lapel microphone should be between three to five inches from the mouth or sound source. Make sure that the voice intensity or sound source is not too loud. Loud speech signals can distort or over-amplify the ALD user.

4. Determine the best location for the ALD's receiver(s).
   a. For soundfield amplification system, the speakers must be strategically placed in the classroom. Consult with your audiologist and/or professionals familiar with room acoustics regarding the best placement of the loudspeakers.
   b. Head positioning and distance from the room loop are variables that need to be considered for students who use the telecoil in the hearing aid as the receiver. Different places in the room may be tried with the receiver to determine the best reception.

5. Provide information for the entire class on how the ALD will be incorporated into classroom instruction. Since the ALD user may not have access to questions raised by those not wearing the microphone, be sure to repeat questions and comments from other students. Remind students to speak one at time. When possible, pass the microphone/ transmitter from student to student. Some students will switch on the environmental microphone on the FM receiver in order to hear peers.

6. Continue to use the communication strategies you used with students who wear hearing aids.
   a. Face the student. Although the student can hear at greater distances with the ALDs, she/he may rely heavily on visual cues to aid understanding. Make sure the microphone does not block the mouth.
   b. Speak slowly and clearly.
   c. Favorable seating, close to the instructor and blackboard is still recommended.

7. Allow the student to couple the ALD system to audiovisual equipment when possible.

8. Perform a listening check with the equipment each time it is used. A maintenance routine and schedule should be established.

There are a variety of Assistive Listening Devices which can be utilized effectively in the classroom. No single technology is without limitations or can be expected to fulfill all the essential auditory needs of all users. Consult with an audiologist and the student to determine the most appropriate assistive listening device. ALDs can maintain a clear presentation of the speech signal in the presence of poor room acoustics. Therefore, the student with a hearing loss has better access to classroom information.

For more information, contact:
Northeast Technical Assistance Center
Rochester Institute of Technology
National Technical Institute for the Deaf
52 Lomb Memorial Drive
Rochester, NY 14623-5604

716-475-6433 (V/TTY)
716-475-7660 (Fax)
Email: netac@rit.edu
WWW: http://www.rit.edu/~netac

NETAC

This *NETAC Teacher Tipsheet* was prepared by Catherine Clark, audiologist, National Technical Institute for the Deaf, a college of Rochester Institute of Technology, Rochester, New York.

This publication was developed in 1998 under a grant from the U.S. Department of Education, Office of Special Education and Rehabilitative Services (OSERS) and produced through a cooperative agreement between RIT and OSERS (H078A60004). The contents herein do not necessarily represent the Department of Education's policy nor endorsement by the Federal Government.